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LAW OFFICES
SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20037-3202
TELEPHONE. (202) 293-7060

TELEX
6491103
FACSIMILE
(202) 293 7860
(202) 293-9131
(202) 293-2920

March 23, 1998

ROBERT J. SEAS, JR., P.C.

DIRECT DIAL
(202) 663-7907

BOX PATENT APPLICATION

Assistant Commissioner of Patents
Washington, D.C. 20231

Re: Application of Hideyuki Hayashi and Katsuhiro Sasaki
**INSERT CONDUCTOR AND METHOD OF MANUFACTURING A
BRUSH HOLDER**
Our Ref: Q49782

Dear Sir:

Attached hereto is the application identified above including the specification, claims, 11 sheets of drawing (Figures 1-17), Information Disclosure Statement with PTO-1449, executed Assignment and PTO 1595 form, and executed Declaration/Power of Attorney.

The Government filing fee is calculated as follows:

Total claims	$\frac{8}{3} - 20 = \frac{0}{0}$	$\times \$22 =$	\$ 0
Independent claims	$\frac{3}{3} - 3 = \frac{0}{0}$	$\times \$82 =$	\$ 0
Base Fee			\$ 790.00
Multiple Dependent Claim Fee (\$270.00)			\$

TOTAL FILING FEE **\$ 790.00**

Recordation of Assignment **\$ 40.00**

TOTAL FEE **\$ 830.00**

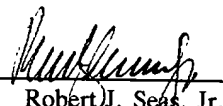
Checks for the statutory filing fee of \$790.00 and Assignment recordation fee of \$40.00 are attached. You are also directed and authorized to charge or credit any difference or overpayment to Deposit Account No. 19-4880. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from Japan 9-266785 filed September 30, 1997. The priority document is submitted herewith.

Respectfully submitted,

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
Attorneys for Applicant

By:


Robert J. Seas, Jr.
Registration No. 21,092

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SUGHRUE, MION, ZINN, MACPEAK & SEAS

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Recordation of Assignment \$ 40.00

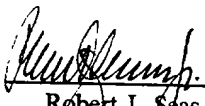
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INSERT CONDUCTOR AND METHOD OF MANUFACTURING A BRUSH HOLDER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an insert conductor used as a component of a brush holder incorporated in, for example, a vehicular charging generator, and a method of manufacturing a brush holder that employs the insert conductor.

2. Description of Related Art

Fig. 8 is a sectional side elevation showing a conventional vehicular charging generator which is equipped with: a case 3 constituted by an aluminum front bracket 1 and a rear bracket 2; a shaft 6 which is provided in the case 3 and which has a pulley 4 fixed on one end thereof; a rotor 7 fixed on the shaft 6; a fan 5 fixed on a side surface of the rotor 7; a stator 8 fixed on an internal surface of the case 3; a slip ring 9 which is fixed on the other end of the shaft 6 and which supplies current to the rotor 7; a pair of brushes 10 which slide on the slip ring 9; a brush holder 11 which houses the brushes 10; and a rectifier 12 which is electrically connected to the stator 8 to rectify the alternating current generated in the stator 8 into direct current.

The vehicular charging generator is equipped with: a heat sink 17 fitted in the brush holder 11; a regulator 18 which is bonded to the heat sink 17 and which regulates the magnitude of the AC voltage generated in the stator 8; and a ventilation guide 19 which is fixed on an outer peripheral section of the brush holder 11 and which guides an airflow generated by the rotation of the fan 5 to the regulator 18 and a stator coil 16.

The rotor 7 is provided with a rotor coil 13 through which a current flows so as to generate a magnetic flux, and an

iron, hook-shaped field core 14 which covers the rotor coil 13 and forms a magnetic pole with the magnetic flux.

The stator 8 is equipped with a stator core 15 and the stator coil 16, the conductor of which is wound around the stator core 15 and generates alternating current as the magnetic flux of the rotor 7 changes when the rotor 7 rotates.

In the vehicular charging generator having the configuration described above, current is supplied from a battery, not shown, to the rotor coil 13 via the brushes 10 and the slip ring 9 to generate a magnetic flux, thus forming the magnetic pole in the field core 14. The pulley 4 is driven by an engine and the rotor 7 is rotated by the shaft 6; therefore, the rotating magnetic field is applied to the stator coil 16, and an electromotive force is generated in the stator coil 16. The AC electromotive force travels through the rectifier 12 to be rectified to DC, and the magnitude thereof is adjusted by the regulator 18 before it is charged to the battery.

Fig. 9A is a front view of the brush holder 11 shown in Fig. 8; Fig. 9B is a top plan view of the brush holder 11 of Fig. 9A; Fig. 10A is a front view of the ventilation guide 19 shown in Fig. 9A; and Fig. 10B is a top plan view of Fig. 10A.

The brush holder 11 has wiring having connector terminals 21 electrically connected to the battery, and an insert molded resin brush holder main body 22 in which wiring is embedded. The brush holder main body 22 has a connector 23 covering the connector terminals 21 and a heat sink case 25 housing a heat sink 17.

The arc ventilation guide 19 engages the brush holder 11. First, second, and third short circuit preventing covers 29a, 29b, and 29c are formed on the ventilation guide 19 to prevent short circuits between exposed portions of the wiring

28a, 28b, and 28c and the rear bracket 2. The first short circuit preventing cover 29a and the second short circuit preventing cover 29b have a U-shaped cross-section, and the third short circuit preventing cover 29c is arc shaped.

The method of manufacturing the brush holder 11 having the aforesaid configuration will now be explained.

First, an iron sheet is subjected to stamping to form a conductor 31 shown in Fig. 11. The conductor 31 has an outer frame 32 and a wiring section 34 connected to the outer frame 32 via connections 33. The wiring section 34 is composed of a plurality of wires 37 connected via the connections 33.

Next, the conductor 31 is subjected to insert resin molding to form a molded unit 36 in which the brush holder main body 22 has been formed on the conductor 31 as shown in Fig. 12.

In the following step, the respective connections 33 are cut by stamping to make the brush holder 11 shown in Fig. 13. Fig. 13 is a rear view of the brush holder 11 shown in Fig. 9.

In designing the brush holder, there are some cases in which, for example, the connector terminals for wiring cannot be positioned in the same plane in the conductor, and the brush holder must be manufactured by having the connector terminals stacked in the middle of the manufacturing process.

Fig. 14 is a front view illustrating a conductor 41 used in the foregoing cases; and Fig. 15 is a front view illustrating a first connector terminal 42 and a second connector terminal 43 combined on the conductor 41.

The conductor 41 has an outer frame 44 and a wiring section 46 connected to the outer frame 44 via connections 45. The wiring section 46 is composed of a plurality of wires 52 interconnected via the connections 45.

The first connector terminal 42 and the second connector terminal 43, which are discrete wires, have engaging holes 47 and 48, respectively, in the middle portions thereof.

In this case, to form a molded unit 49 as shown in Fig. 16, it is necessary to prepare a metal mold provided with pins which penetrate the engaging holes 47 and 48 to position the first and second connector terminals 42 and 43 in relation to the conductor 41. Hence, at the rear of the molded unit 49 shown in Fig. 16, a brush holder main body 50 has pin apertures 51 as illustrated in Fig. 17.

The conventional brush holder 11 shown in Fig. 9 has the following problems: the connections 33 are cut after molding the brush holder main body 22, and portions of the wiring i.e, the exposed portions 28a, 28b, and 28c, are therefore partly exposed to the outside, so that moisture, for example, adheres to those exposed portions 28a, 28b, and 28c, leading to the possibility that the wire will become disconnected due to galvanic corrosion and dissolution.

Further, in order to prevent a short circuit between the exposed portions 28a, 28b, and 28c and the rear bracket 2, the ventilation guide 19 must be provided with the first, second, and third short circuit preventing covers 29a, 29b, and 29c. This inevitably makes the entire configuration of the ventilation guide 19 complicated, and the configuration of the mold for making the ventilation guide 19 accordingly becomes complicated, resulting in higher manufacturing costs for the ventilation guide 19.

Furthermore, in another conventional brush holder, the first and second connector terminals 42 and 43, shown in Fig. 14, are positioned with respect to the conductor 41 by the pins formed on the mold, so that the pin apertures 51 remain in the

brush holder main body 50 as shown in Fig. 17. This presents a problem in that the internal surfaces of the engaging holes 47 and 48 of the first and second connector terminals 42 and 43, respectively, are inevitably exposed to the outside through the pin apertures 51, so that moisture enters through the pin apertures 51, leading to the possibility that the wire 52 will become disconnected due to galvanic corrosion and dissolution as in the case of the brush holder 11 mentioned previously.

There has been yet another problem in that the pins engaging with the engaging holes 47 and 48 must be formed on the mold, adding to the manufacturing cost of the mold.

SUMMARY OF THE INVENTION

The present invention has been made with a view toward solving the problems described above, and it is an object of the present invention to obtain an insert conductor which makes it possible to provide a brush holder that does not have wiring positions unnecessarily exposed to the outside and which permits reduced manufacturing costs.

It is another object of the present invention to provide a method of manufacturing a brush holder that employs the aforesaid insert conductor.

According to one aspect of the present invention, there is provided an insert conductor equipped with: a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connect the outer frame and the wiring section and also interconnect the wires; and a deformation preventer which is provided on the conductor such that it extends over the wires and prevents the conductor from being deformed by the resin injection pressure applied during insert resin molding.

In a preferred form, the conductor of the insert conductor is formed by stamping a single metal sheet.

In another preferred form of the insert conductor, the deformation preventer is provided with engaging portions which engage with the portions to be engaged and which are formed in discrete wires.

In still another preferred form of the insert conductor, the conductor is also provided with discrete wires.

In a further preferred form of the insert conductor, the discrete wires are the connector terminals of a brush holder.

In a further preferred form of the insert conductor, the deformation preventer is composed of polyphenylene sulfide resin.

According to another aspect of the present invention, there is provided a method of manufacturing a brush holder including the steps of: forming a secondary insert conductor, which has a wire and a deformation preventer, by cutting the connections of a primary insert conductor; and forming a brush holder main body by subjecting the secondary insert conductor to insert resin molding.

According to yet another aspect of the present invention, there is provided a method of manufacturing a brush holder including the steps of: forming a secondary insert conductor, which has a wire and a deformation preventer, by cutting the connections of a primary insert conductor; engaging a portion to be engaged of a connector terminal in an engaging portion of the deformation preventer; and subjecting the secondary insert conductor and the connector terminal to insert resin molding so as to form a brush holder main body.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front view illustrating an insert conductor of a first embodiment in accordance with the present invention;

Fig. 2 is a front view illustrating a brush holder manufactured by employing the insert conductor shown in Fig. 1;

Fig. 3 is a front view illustrating the insert conductor during the manufacturing process of the brush holder shown in Fig. 2;

Fig. 4A is a front view illustrating a ventilation guide provided on the brush holder of Fig. 2, and Fig. 4B is a top plan view of Fig. 4A;

Fig. 5A is a front view illustrating an insert conductor of a second embodiment in accordance with the present invention, and Fig. 5B is a side view of Fig. 5A;

Fig. 6 is a front view illustrating the insert conductor during the manufacturing process of the brush holder;

Fig. 7 is a front view illustrating the insert conductor during the manufacturing process of the brush holder;

Fig. 8 is a sectional side elevation illustrating a conventional charging generator;

Fig. 9A is a front view illustrating the brush holder shown in Fig. 8, and Fig. 9B is a top plan view of the brush holder shown in Fig. 9A;

Fig. 10A is a front view illustrating the ventilation guide shown in Fig. 8, and Fig. 10B is a top plan view of Fig. 10A;

Fig. 11 is a front view illustrating a conductor which is a component of the brush holder shown in Figs. 9A and 9B;

Fig. 12 during a front view illustrating the insert

conductor during the manufacturing process of the brush holder shown in Figs. 9A and 9B;

Fig. 13 is a rear view illustrating the brush holder shown in Figs. 9A and 9B;

Fig. 14 is a front view illustrating the conductor of another conventional charging generator;

Fig. 15 is a front view illustrating the conductor of Fig. 14 in which a connector terminal has been assembled;

Fig. 16 is a front view illustrating the insert conductor during the manufacturing process of a conventional brush holder; and

Fig. 17 is a rear view illustrating the insert conductor of Fig. 16.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

First Embodiment:

Fig. 1 is a front view of a primary insert conductor 60 of a first embodiment according to the present invention. The primary insert conductor 60 is equipped with a conductor 61 made by stamping an iron sheet, and deformation preventers 62 which are provided on both surfaces of the conductor 61 to prevent the conductor 61 from being deformed by the resin injection pressure applied during an insert resin molding process.

The conductor 61 is equipped with a wiring section 64 composed of a plurality of wires 63, an outer frame 65 surrounding the wiring section 64, and connections 66 which connect the outer frame 65 with the wiring section 64 and which also interconnect the wires 63.

Fig. 2 is a front view illustrating a brush holder 67 manufactured by employing the primary insert conductor 60; the

brush holder 67 has a wiring section 64 having a connector terminal electrically connected to the battery, and a brush holder main body 68 in which the wires 63 and the deformation preventers 62 have been covered by insert molding with polyphenylene sulfide resin. The brush holder main body 68 has a connector 69 which covers the connector terminal.

The method of manufacturing the brush holder 67 having the foregoing configuration will now be described.

First, the conductor 61, which has the outer frame 65, the connections 66, and the wiring section 64, is formed by stamping an iron sheet. Then, the conductor 61 is subjected to the insert resin molding by using polyphenylene sulfide resin so as to manufacture the primary insert conductor 60 in which both surfaces of the conductor 61 are provided with the deformation preventer 62 to reinforce the mechanical strength of the conductor 61 as shown in Fig. 1.

In the following step, a plurality of the connections 66 are cut by stamping to form a secondary insert conductor 70 illustrated in Fig. 3. The secondary insert conductor 70 is subjected to insert resin molding using polyphenylene sulfide resin so as to make the brush holder 67 in which the secondary insert conductor 70 is embedded in the brush holder main body 68.

In this embodiment, the deformation preventers 62 for reinforcing the mechanical strength of the conductor 61 are provided on both surfaces of the wiring section 64. Accordingly, the secondary insert conductor 70 will not be deformed under the resin injection pressure applied during insert resin molding even when the outer frame 65 and the connections 66, which are unnecessary for the conductor 61, are cut and removed before forming the brush holder main body 68 by

insert resin molding, the secondary insert conductor 70 is subjected to the insert resin molding to embed the secondary insert conductor 70.

In contrast, in the conventional method, the unnecessary portions of the conductor 31 are cut and removed after molding the brush holder main body 22 is molded to avoid deforming the conductor 31 with the resin injection pressure. As a result, the brush holder 11 is manufactured with portions of the wires 20 unnecessarily exposed. However, the brush holder 67 according to this embodiment avoids such exposure. This makes it possible to form a ventilation guide 71 shown in Fig. 4A and Fig. 4B which eliminates the need for the short circuit preventing covers 29a, 29b and 29c which were required to prevent a short circuit between the rear bracket and the exposed portions, thus resulting in reduced manufacturing costs for the ventilation guide 71.

Second Embodiment:

Fig. 5A is a front view illustrating a primary insert conductor 82 in which deformation preventers 81 for reinforcing the mechanical strength of a conductor 80 are formed on both surfaces of the conductor 80; and Fig. 5B is a side view illustrative of an essential section of Fig. 5A.

The conductor 80 is equipped with a wiring section 84 composed of a plurality of wires 83, an outer frame 85 surrounding the wiring section 84, a connector terminal 87 which is composed of a discrete wire, and connections 88 which respectively connect the wiring section 84 and the connector terminal 87.

Protuberances 89 are engaging portions which are formed on the deformation preventer 81. The connector terminal

87 has engaging holes 90 in which the protuberances 89 are engaged.

In this embodiment, the connections 88 of the conductor 80 are cut and the connector terminal 87 is separated from the conductor 80 as shown Fig. 6, then the engaging holes 90 of the connector terminal 87 are secured to the protuberances 89. Next, the protuberances 89 are thermally caulked to secure the connector terminal 87 to the wiring section 84 so as to produce a secondary insert conductor 91 shown in Fig. 7.

The subsequent steps for manufacturing the brush holder are the same as those of the first embodiment; the secondary insert conductor 91 is subjected to insert resin molding using polyphenylene sulfide resin, and the secondary insert conductor 91 is embedded in the brush holder main body to thereby fabricate the brush holder.

Thus, the insert conductor in accordance with the present invention is equipped with: a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connect the outer frame and the wiring section and which also interconnect the wires; and a deformation preventer which is provided on the conductor such that it extends over the wires and prevents the conductor from being deformed by the resin injection pressure during insert resin molding. Hence, the insert conductor will not be deformed by the resin injection pressure applied during insert resin molding even when the outer frame and the connections, which are unnecessary for the conductor, are cut and removed before forming the brush holder main body by insert resin molding. This makes it possible to manufacture a brush holder that does not have wire portions unnecessarily exposed to the outside, thus preventing

disconnection of the wires caused by galvanic corrosion and dissolution due to moisture adhesion.

Moreover, it is no longer necessary to provide, for example, the ventilation guide mounted on a conventional brush holder with the short circuit preventing cover between the exposed portion of the wire and the rear bracket. This allows a simpler configuration and reduced cost for the ventilation guide.

Further, the conductor of the insert conductor in accordance with the present invention is formed by stamping a single metal sheet, making it possible to simultaneously and easily form the outer frame, the wiring section, and the connections making up the conductor.

Furthermore, in the insert conductor according to the present invention, since the deformation preventer is provided with engaging portions which engage the portions to be engaged and which are formed on discrete wires, it is possible to position the discrete wires in relation to the conductor via the deformation preventer. This prevents the pin apertures formed by the pins of the mold from remaining in the brush holder main body and accordingly prevents the internal surfaces of the engaging holes of the discrete wires, which are engaged with the pins, from being exposed outside.

In addition, it is no longer necessary to form any pins on the mold, resulting in reduced costs for manufacturing the mold.

In the insert conductor according to the present invention, the conductor is also provided with discrete wires; hence, the discrete wires can be easily formed at the same time as the outer frame, the wiring section, and the connections making up the conductor.

Further, in the insert conductor according to the present invention, the discrete wires act as the connector terminals of the brush holder; hence, the connector terminals can be easily formed at the same time as the outer frame, the wiring section, and the connections making up the conductor.

Furthermore, in the insert conductor, the deformation preventer is composed of a polyphenylene sulfide resin, which makes it possible to provide a deformation preventer that exhibits good insulating properties, heat resistance, mechanical strength, and formability.

The method of manufacturing a brush holder in accordance with the present invention includes the steps of: forming a secondary insert conductor, which has a wire and a deformation preventer, by cutting the connections in a primary insert conductor; and forming a brush holder main body by subjecting the secondary insert conductor to insert resin molding, thus making it possible to easily manufacture a brush holder that does not have wire portions unnecessarily exposed to the outside.

The method of manufacturing a brush holder in accordance with the present invention includes the steps of: forming a secondary insert conductor, which has wires and a deformation preventer, by cutting connections in a primary insert conductor; engaging a portion to be engaged of a connector terminal in an engaging portion of the deformation preventer; and subjecting the secondary insert conductor and the connector terminal to insert resin molding so as to form a brush holder main body, thus making it possible to easily manufacture at a lower cost a brush holder that does not have wire portions unnecessarily exposed to the outside.

WHAT IS CLAIMED IS:

1. An insert conductor comprising:

a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connects said outer frame and said wiring section and which interconnect said wires; and

a deformation preventer which is provided on said conductor such that it extends over said wires and which prevents the conductor from being deformed by a resin injection pressure applied during insert resin molding.

2. An insert conductor according to Claim 1, wherein said conductor is formed by stamping a single metal sheet.

3. An insert conductor according to Claim 1, wherein said deformation preventer is provided with an engaging portion that engages a portion to be engaged which is formed in a discrete wire.

4. An insert conductor according to Claim 3, wherein said discrete wire is included in said conductor.

5. An insert conductor according to Claim 3, wherein said discrete wire is the connector terminal of a brush holder.

6. An insert conductor according to Claim 1, wherein said deformation preventer is composed of polyphenylene sulfide resin.

7. A method of manufacturing a brush holder that

employs a primary insert conductor equipped with a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connects said outer frame and said wiring section and which interconnect said wires; and a deformation preventer which is provided on said conductor such that it extends over said wires and prevents the conductor from being deformed by a resin injection pressure applied during insert resin molding, said method comprising the steps of:

forming a secondary insert conductor, which has said wires and said deformation preventer, by cutting said connections of said primary insert conductor; and

forming a brush holder main body by subjecting said secondary insert conductor to insert resin molding.

8. A method of manufacturing a brush holder that employs a primary insert conductor equipped with a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connect said outer frame and said wiring section and which interconnect said wires; and a deformation preventer which is provided on said conductor such that it extends over said wires so as to prevent the conductor from being deformed by a resin injection pressure applied during insert resin molding and which has a portion that engages the portion to be engaged of the connector terminal, said method comprising the steps of:

forming a secondary insert conductor, which has said wires and said deformation preventer, by cutting said connections of said primary insert conductor;

fitting the portion to be engaged of said connector terminal to said engaging portion of said deformation preventer;

and

subjecting said secondary insert conductor and said connector terminal to insert resin molding so as to form a brush holder main body.

ABSTRACT OF THE DISCLOSURE

An insert conductor that makes it possible to provide a brush holder that does not have wire portions unnecessarily to the outside and which permits reduced manufacturing cost. The insert conductor is equipped with: a conductor which has a wiring section composed of a plurality of wires, an outer frame surrounding the wiring section, and connections which connect the outer frame with the wiring section and which interconnect the wires, and a deformation preventer which is provided on the conductor to prevent the conductor from being deformed by the resin injection pressure applied during insert resin molding.

FIG. 1

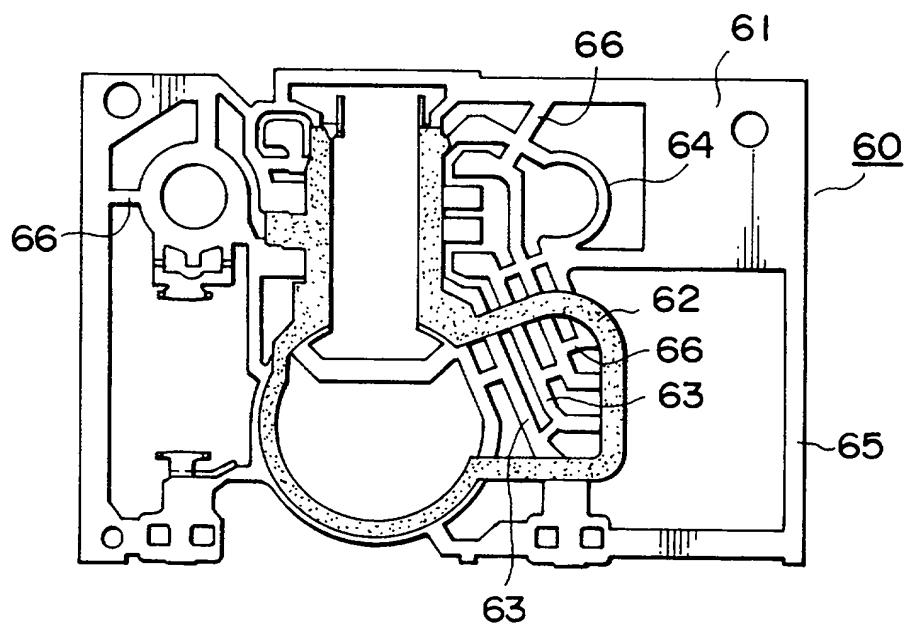


FIG. 2

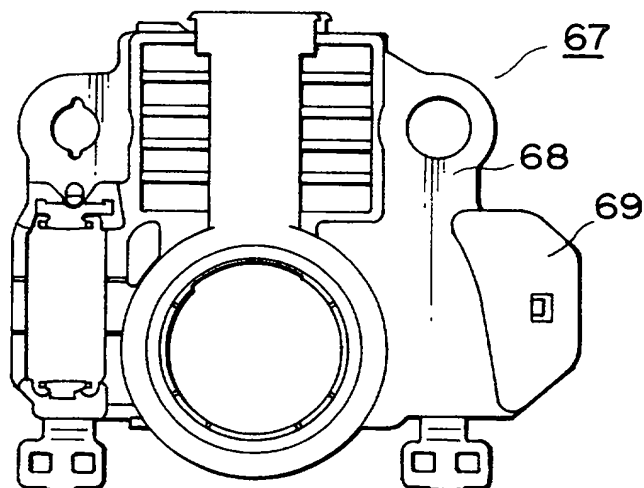


FIG. 3

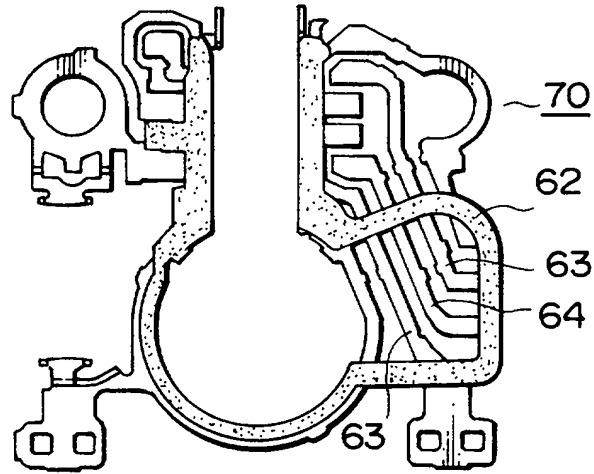


FIG. 4A

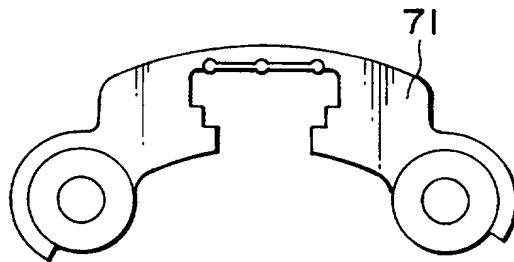


FIG. 4B



FIG. 5A

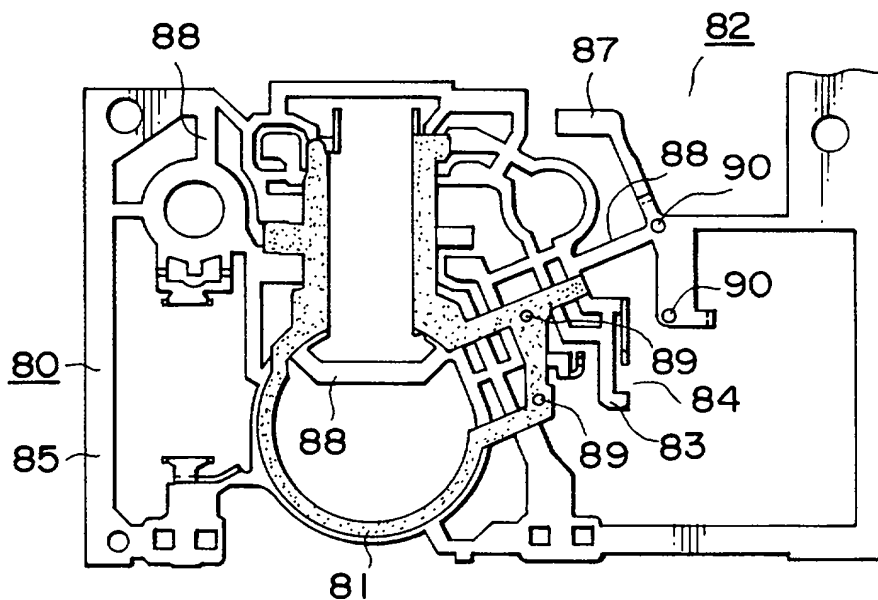


FIG. 5B

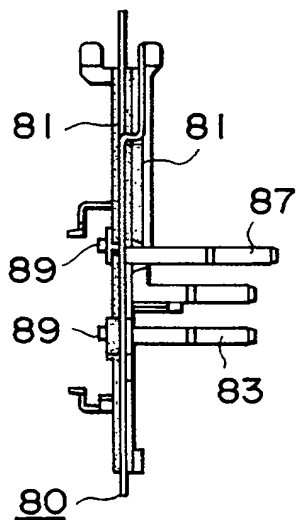


FIG. 6

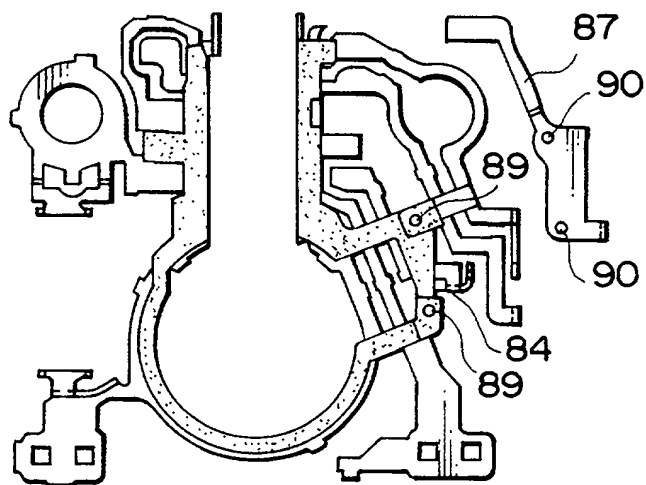


FIG. 7

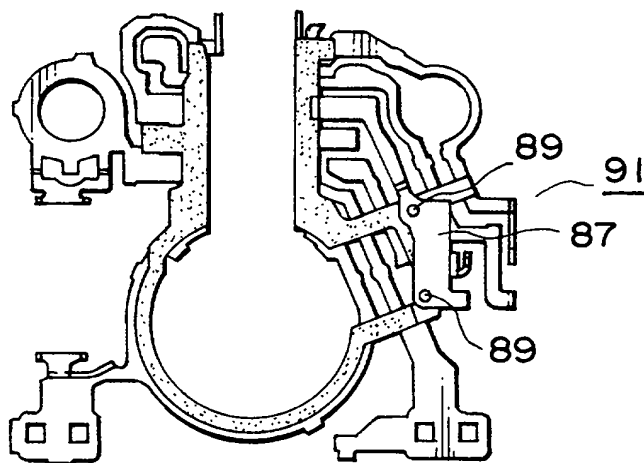
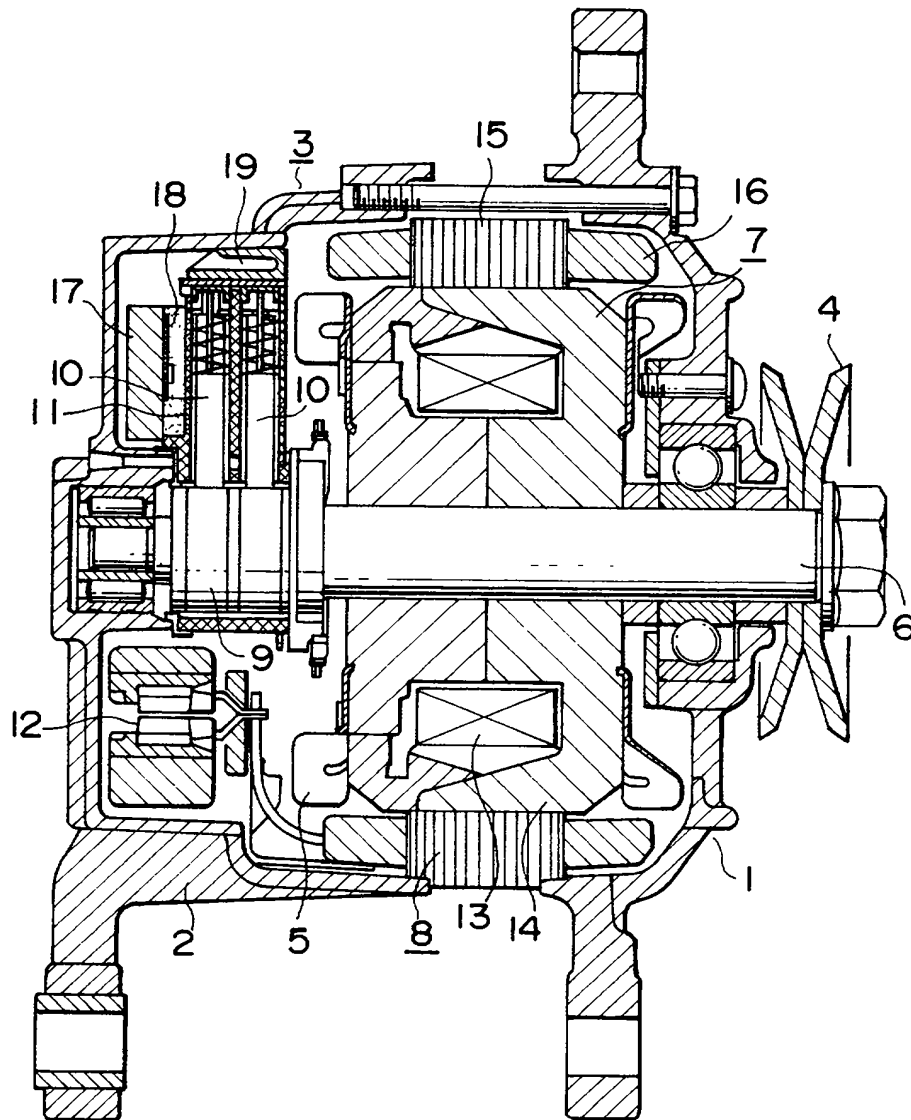


FIG. 8



066220 066220 066220

FIG. 9A

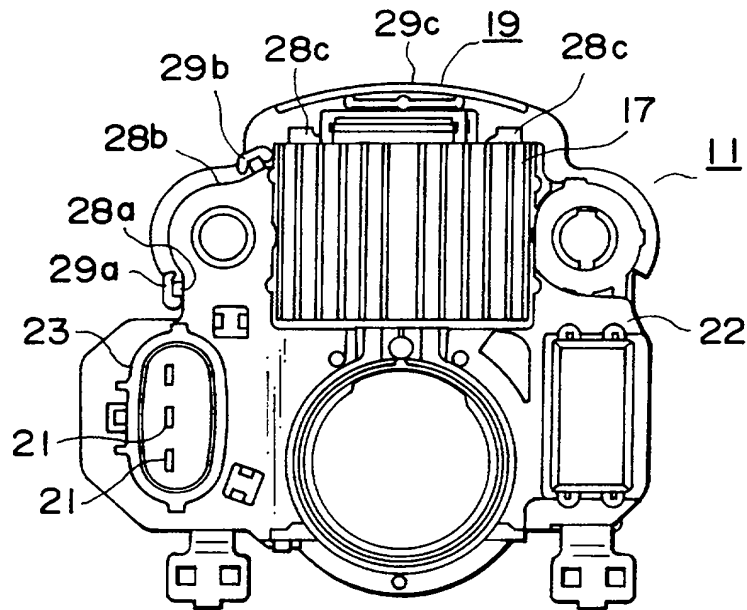


FIG. 9B

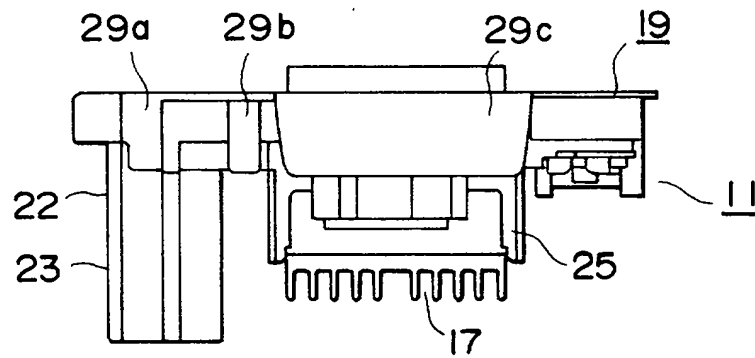


FIG. 10A

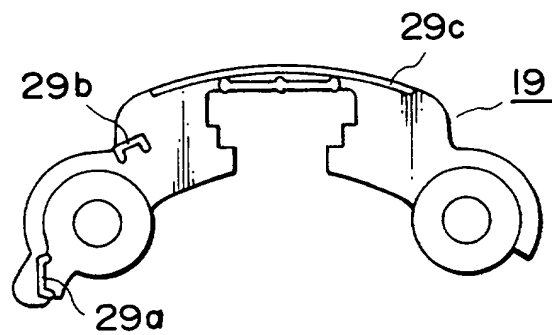


FIG. 10B

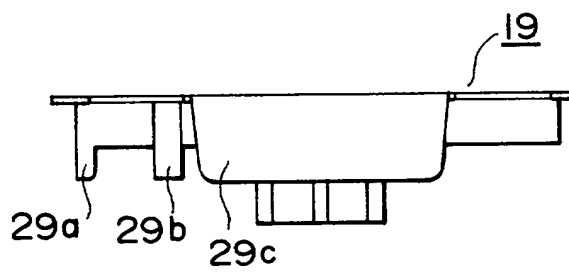


FIG. 11

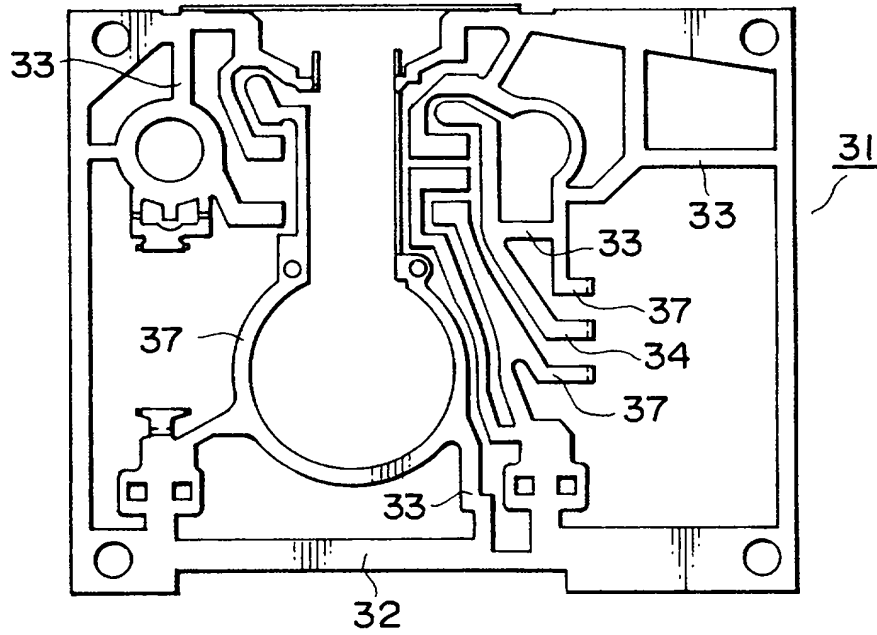


FIG. 12

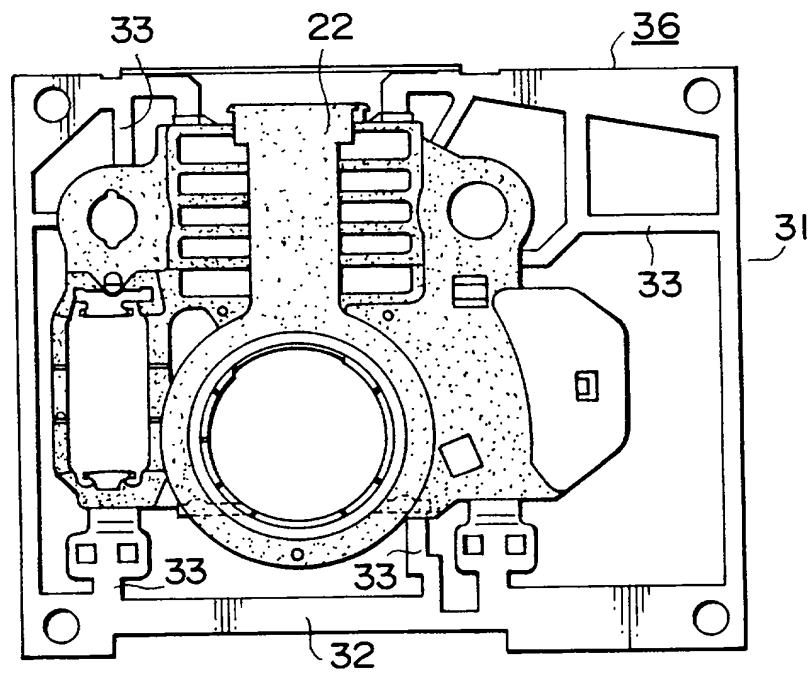


FIG. 13

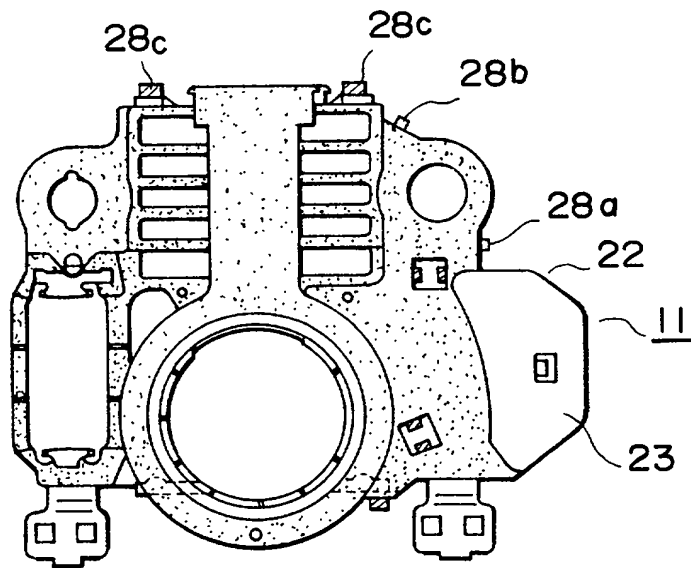


FIG. 14

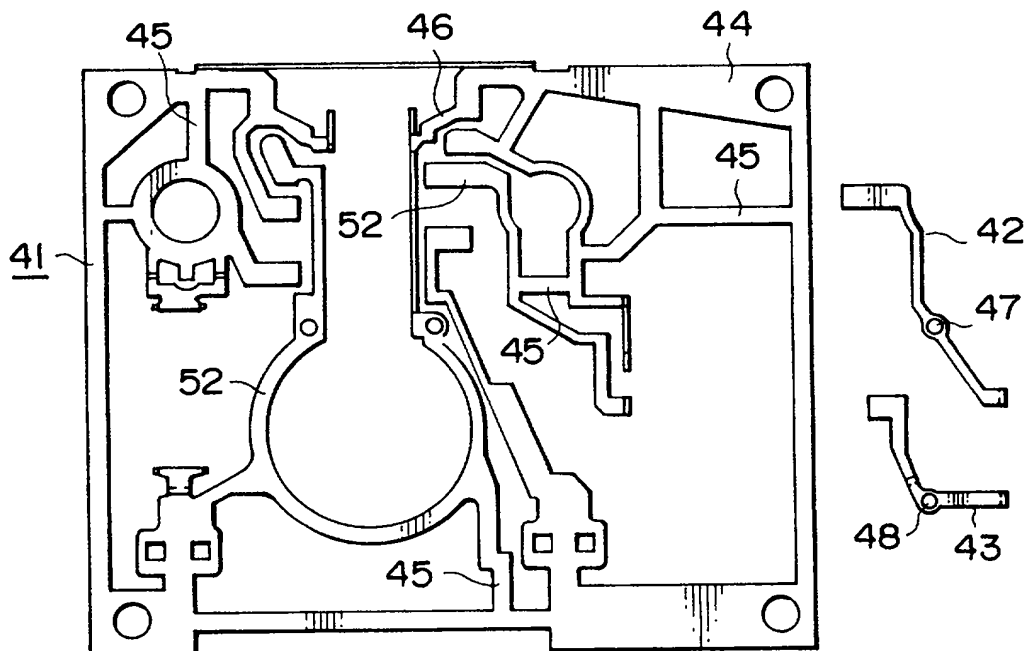


FIG. 15

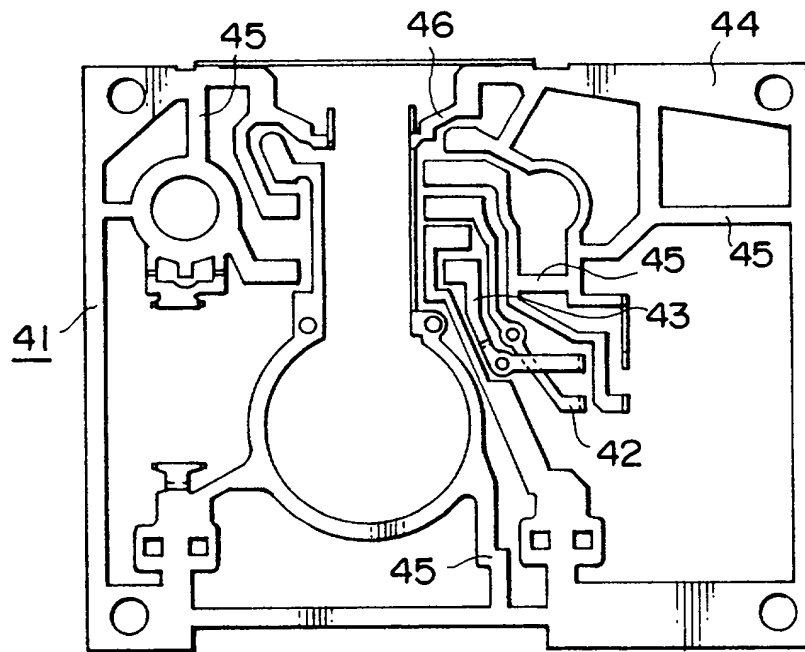


FIG. 16

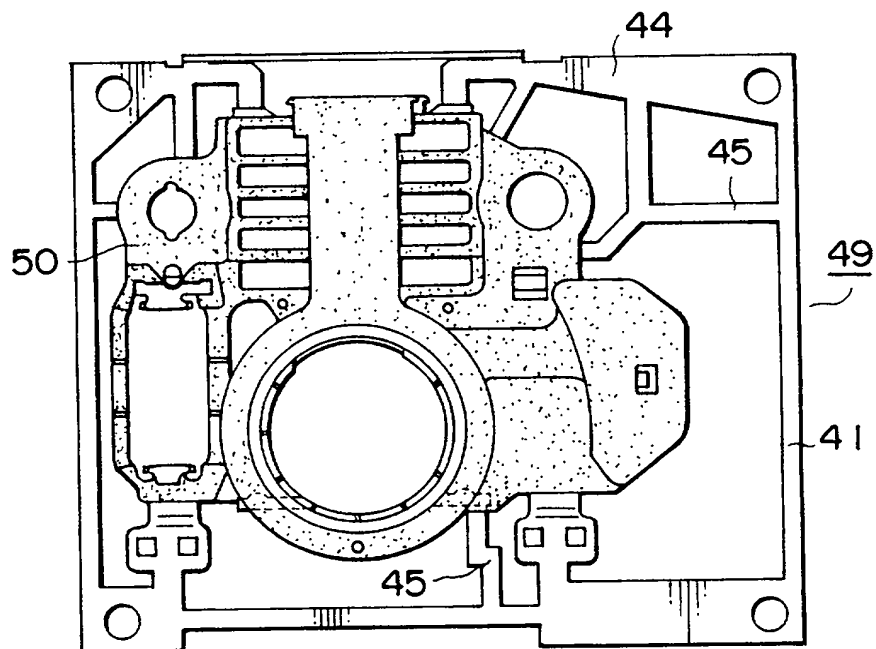
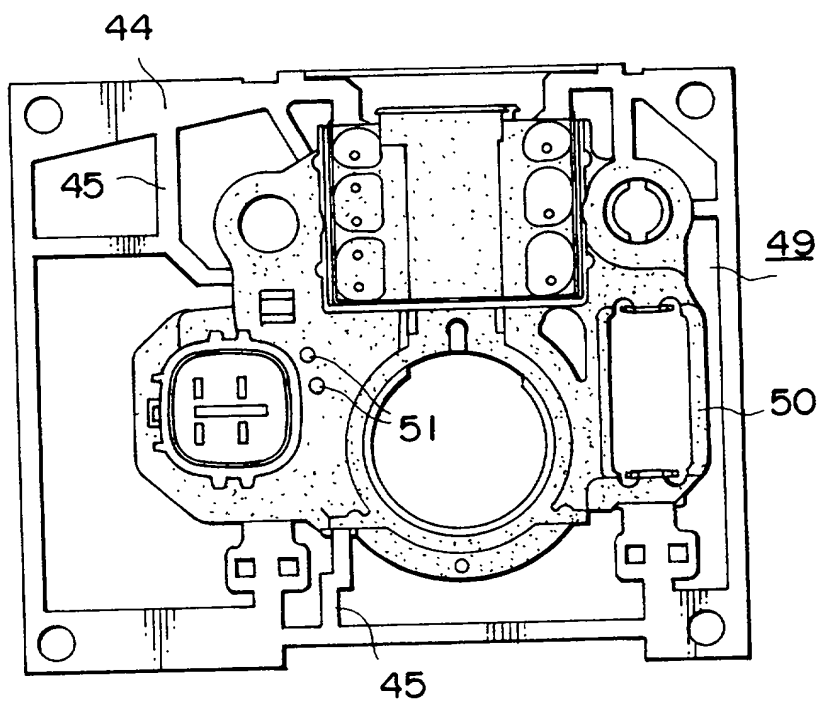


FIG. 17



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Declaration and Power of Attorney For Patent Application**特許出願宣言書及び委任状****Japanese Language Declaration****日本語宣言書**

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

INSERT CONDUCTOR AND METHOD OF

MANUFACTURING A BRUSH HOLDER

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ 月 日に提出され、米国出願番号または特許協定条約
国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration (日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基き下記の、米 国以外の国の少なくとも一カ国を指定している特許協力条約 365 (a) 項に基き国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

9-266785	Japan
(Number)	(Country)
(番号)	(国名)
(Number)	(Country)
(番号)	(国名)

私は、第35編米国法典119条(e)項に基いて下記の米 国特許出願規定に記載された権利をここに主張いたします。

(Application No.)	(Filing Date)
(出願番号)	(出願日)

私は、下記の米国法典第35編120条に基いて下記の米 国特許出願に記載された権利、又は米 国を指定している特許協力条約365条(c)に基き権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米 国特許出願に開示されていない限り、その先行米 国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)	(Filing Date)
(出願番号)	(出願日)
(Application No.)	(Filing Date)
(出願番号)	(出願日)

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じていることに基き表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基き、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed

優先権主張なし

30 / 09 / 1997	<input type="checkbox"/>
(Day/Month/Year Filed)	
(出願年月日)	
	<input type="checkbox"/>
(Day/Month/Year Filed)	
(出願年月日)	

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)	(Filing Date)
(出願番号)	(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)	(現況: 特許許可済、係属中、放棄済)
(Status: Patented, Pending, Abandoned)	(現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration

委任状： 私は、下記発明者として、以下の代理人をここに
 委任し、本願の手続きを遂行すること並びにこれに関する一
 切の行いを特許商標局に対して行うことを委任する。
 (代理人氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby
 appoint the following attorney(s) and/or agent(s) to
 prosecute this application and transact all business in the
 Patent and Trademark Office connected therewith (list
 name and registration number)

I hereby appoint John H. Mion, Reg. No. 18,879; Donald E. Zinn, Reg. No. 19,046; Thomas J. Macpeak, Reg. No. 19,292;
 Robert J. Seas, Jr., Reg. No. 21,092; Darryl Mexic, Reg. No. 23,063; Robert V. Sloan, Reg. No. 22,775; Peter D. Olsey, Reg.
 No. 24,513; J. Frank Osha, Reg. No. 24,625; Waddell A. Biggart, Reg. No. 24,861; Robert G. McMorrow, Reg. No. 19,093;
 Louis Gubinsky, Reg. No. 24,835; Neil B. Siegel, Reg. No. 25,200; David J. Cushing, Reg. No. 28,703; John R. Inge, Reg. No.
 26,916; Joseph J. Ruch, Jr., Reg. No. 26,577; Sheldon I. Landsman, Reg. No. 25,430; Richard C. Turner, Reg. No. 29,710;
 Howard L. Bernstein, Reg. No. 25,665; Alan J. Kasper, Reg. No. 25,426; Kenneth J. Burchfiel, Reg. No. 31,333; Gordon Kit,
 Reg. No. 30,764; Susan J. Mack, Reg. No. 30,951; Frank L. Bernstein, Reg. No. 31,484; Mark Boland, Reg. No. 32,197; William
 H. Mandir, Reg. No. 32,156; Scott M. Daniels, Reg. No. 32,562; Brian W. Hannon, Reg. No. 32,778; Abraham J. Rosner, Reg.
 No. 33,276; Bruce E. Kramer, Reg. No. 33,725; Paul F. Neils, Reg. No. 33,102; and Brett S. Sylvester, Reg. No. 32,765, my
 attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and
 request that all correspondence about the application be addressed to SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC, 2100
 Pennsylvania Avenue, N.W., Washington, D.C. 20037-3202.

書類の送付先:

Send Correspondence to:

SUGHRUE, MION, ZINN, MACPEAK & SEAS
 2100 Pennsylvania Avenue, N.W., Washington, D.C. 20037

直通電話連絡先: (名称及び電話番号)

Direct Telephone Calls to: (name and telephone number)

(202)293-7060

唯一の又は第一の発明者の氏名	Full name of sole or first inventor	Hideyuki HAYASHI	
同発明者の署名	Inventor's signature	Date	
	Hideyuki Hayashi	28/02/1998	
住所	Residence	March 5, 1998	H. H.
	Tokyo, Japan		
国籍	Citizenship	March 5, 1998	
	Japan		
郵便の宛先	Post office address		
	c/o Mitsubishi Electric Engineering Co.,		
	Ltd., 6-2, Otemachi 2-chome, Chiyoda-ku,		
	TOKYO 100-0004 JAPAN		
第二の共同発明者の氏名 (該当する場合)	Full name of second joint inventor, if any	Katsuhiko SASAKI	
同第二発明者の署名	Second inventor's signature	Date	
	Katsuhiko Sasaki	March 2, 1998	
住所	Residence		
	Tokyo, Japan		
国籍	Citizenship	Japan	
郵便の宛先	Post office address		
	c/o Mitsubishi Denki Kabushiki Kaisha,		
	2-3, Marunouchi 2-chome, Chiyoda-ku,		
	TOKYO 100-8310 JAPAN		

(第三又はそれ以降の共同発明者に対しても同様な情報
 および署名を提供すること。)

(Supply similar information and signature for third and
 subsequent joint inventors.)